In the Claims:

Please amend the claims so that the pending claim set reads as follows:

1-99 (Cancelled).

100.   (New) A system for the detection of stroke in a subject, the system comprising:

an electrical stimulator configured to apply a current to at least one pair of electrodes, the electrodes being positioned on a skull of the subject to apply the current and to receive brain activity of the subject;

an analog to digital (A/D) converter configured to record the brain activity of the subject in the form of spectral electrical impedance tomography recordings and electroencephalography recordings, simultaneously; and

a computer system configured to generate real time spectral electrical impedance data from the spectral electrical impedance tomography recordings, the spectral electrical impedance data indicating an impedance change within the brain of the subject, wherein the impedance change is associated with an indication of stroke.

101.   (New) The system of claim 100, wherein the electroencephalography recordings are used to provide an indication of an occurrence that affects the brain.

102.   (New) The system of claim 101, wherein the occurrence that affects the brain includes at least one of stroke, epilepsy, spinal cord injury, and substance abuse.

103.   (New) The system of claim 100, wherein the applied current comprises pink noise.

104.   (New) The system of claim 100, wherein the impedance change associated with the indication of stroke is at least one of: a change in a fluid flow rate within the brain of the subject, and a change in a fluid volume within the brain of the subject.

105. (New) The system of claim 104, wherein the fluid includes blood.

106. (New) The system of claim 100, wherein the computer system generated real time spectral electrical impedance data comprises a real time spectral electrical impedance map to detect the indication of stroke within the subject.

107. (New) The system of claim 100, wherein the computer system generates a plurality of static spectral electrical impedance maps to detect the indication of stroke.

108. (New) The system of claim 100, wherein the electrical stimulator is a function generator.

109. (New) The system of claim 100, wherein the A/D converter is a thirty-two channel, twenty-four bit A/D converter.

110. (New) A system for the detection of stroke in a subject, the system comprising:
an electrical stimulator configured to apply a current to at least one pair of electrodes, the electrodes being positioned on a skull of the subject to apply the current and to receive brain activity of the subject;
an analog to digital (A/D) converter configured to record the brain activity of the subject in the form of spectral electrical impedance tomography recordings and electroencephalography recordings, simultaneously; and
a computer system configured to generate real time spectral electrical impedance data from the spectral electrical impedance tomography recordings, the spectral electrical impedance data indicating an impedance change within the brain of the subject, wherein at least one of the impedance change and the electroencephalography recordings provides an indication of stroke.

111.   (New) A method for detecting stoke in a subject, the method comprising:

positioning a plurality of electrodes on a skull of the subject;

applying a current to at least one pair of the electrodes;

measuring brain activity of the subject in the form of spectral electrical impedance tomography recordings and electroencephalography recordings, simultaneously; and

detecting, using a computer system, an indication of stroke, the computer system configured to generate real time spectral electrical impedance data, the spectral electrical impedance data indicating an impedance change within the brain of the subject, wherein the impedance change is associated with the indication of stroke.

112.   (New) The method of claim 111, further including using the electroencephalography recordings to provide an indication of an occurrence that affects the brain.

113.   (New) The method of claim 112, wherein the occurrence that affects the brain includes at least one of stroke, epilepsy, spinal cord injury, and substance abuse.

114.   (New) The method of claim 111, wherein the applied current comprises pink noise.

115.   (New) The method of claim 111, wherein the impedance change associated with the indication of stroke is at least one of: a change in a fluid flow rate within the brain of the subject, and a change in a fluid volume within the brain of the subject.

116.   (New) The method of claim 115, wherein the fluid includes blood.

117.   (New) The method of claim 111, wherein the computer system generated real time spectral electrical impedance data comprises a real time spectral electrical impedance map to detect the indication of stroke within the subject.

118. (New) The system of claim 111, wherein the computer system generates a plurality of static spectral electrical impedance maps to detect the indication of stroke.

119. (New) The method of claim 111, wherein the electrical stimulator is a function generator.

120. (New) The method of claim 111, wherein the A/D converter is a thirty-two channel, twenty-four bit A/D converter.

121. (New) The system of claim 111 wherein the current is applied over a predetermined range of frequencies of about 0.01 Hz to about 100 KHz.

122. (New) The system of claim 111 further including a database of head models having predetermined characteristics.

123. (New) The system of claim 122 wherein the computer selects an appropriate head model from the database for use in generating the spectral electrical impedance data.

124. (New) A system for the detection of a medical problem affecting the brain in a subject, the system comprising:

an electrical stimulator configured to apply a current to at least one pair of electrodes, the electrodes being positioned on a skull of the subject to apply the current and to receive brain activity of the subject; and

a computer system configured to simultaneously obtain spectral electrical impedance tomography recordings to gather information related to a first medical problem affecting the brain, and electroencephalography recordings to gather information related to a second medical problem affecting the brain.

125.   (New) The system of claim 124 wherein the first medical problem is a change in fluid flow rate within the brain, and the second medical problem is stroke.